

REMARKS

Applicant respectfully requests reconsideration and allowance of the subject application. Claims 1-20 are pending.

35 U.S.C. §102

Claims 1, 9, and 16 are rejected under 35 U.S.C. §102 as being anticipated by U.S. Patent No. 5,822,537 to Katseff et al (Katseff). Applicants respectfully traverse the rejection.

The claimed invention is directed to synchronizing asynchronous time-based and motion data by retrieving from a server frames of data that make up a time-based data stream and a motion data stream, variably buffering one of the two streams, and producing two streams with synchronized frames. The two streams with synchronized frames are played at a client, producing synchronized motion and time-based data. (See Specification, Page 2, lines 1-12). Synchronization of the data frames (data streams) takes place at a synchronizer prior to transmitting the synchronized data streams to a network, eliminating the need for the client to synchronize the data streams. (See Specification, page 9, lines 3-6 and Fig. 4)

Amended **Claim 1**, for example, recites a method of synchronizing asynchronous time-based and motion data in a system in which the time-based data and motion data are transmitted by a server over a network to a client, the method comprising:

retrieving a time-based data stream and a motion data stream at the server, each stream comprising frames of data;

variably buffering one of the time-based data stream and the motion stream to produce two streams having synchronized frames; and

1 using the synchronized frames at the client for playback of
2 synchronized motion and time-based data to a user.

3 The method of claim 1 is not disclosed by Katseff. Katseff shows a
4 multimedia system to record, store and distribute multimedia presentations
5 together with materials that may be referenced during the presentation (see
6 Abstract of Katseff). Katseff shows a continuous media and storage retrieval
7 system used for digitizing and compressing audio, video, and other continuous data
8 (Katseff at col. 5 lines 18-22). Katseff shows a digitizer/compressor that generates
9 a data stream that preferably is in JPEG file format. JPEG file format is preferred
10 because of the inherent synchronization of audio and video streams (Katseff at col.
11 6, lines 60-67 through col. 7, lines 1-7). Katseff further shows an information
12 retrieval system that allows a user to access multimedia information that has been
13 stored in a plurality of databases (Katseff at col. 8, lines 18-22). Katseff does not
14 disclose accessing of separate audio (time-based) and video (motion-based).

15 In Katseff, a workstation (client) retrieves several frames of audio and
16 video from a file server for storage in an audio buffer and a video buffer. No
17 synchronization is made as to the audio and video frames. Katseff discloses that it
18 is preferred that the workstation will have a mechanism to synchronize the
19 presentation of the various outputs (audio and video) (Katseff at col. 8, lines 60-65
20 through col. 9, lines 1-5). Katseff does not disclose that audio and video frames be
21 synchronized prior to receipt at the workstation.

22 Claim 1 in part recites "retrieving a time-based data stream and a motion
23 data stream at the server, each stream comprising frames of data." Katseff does
24 not show this aspect. Katseff describes retrieving single data streams and fails to
25 disclose retrieving separate time-based data and motion data streams. The JPEG

1 file format is particularly pointed out by Katseff, in that JPEG file format provides
2 a single data stream of inherently synchronized audio and video streams.

3 Claim 1 in part recites "variably buffering one of the time-based data stream
4 and the motion stream to produce two streams having synchronized frames."
5 Katseff does not show this aspect. Katseff discloses that audio and video frames
6 are placed in buffers; however Katseff is silent as to synchronizing such audio and
7 video frames at any point. Katseff relies on a mechanism at the workstation to be
8 able to synchronize audio and video frames. The subject application avoids the
9 need for the client to synchronize time-based and motion-based data by
10 synchronizing time-based and motion-based data with one another prior to
11 transmitting to a client.

12 Claim 1 in part recites "using the synchronized frames at the client for
13 playback of synchronized motion and time-based data to a user." Katseff does not
14 show this aspect. Katseff describes a workstation receiving audio and video
15 frames that are not synchronized. Katseff relies on a mechanism at the workstation
16 (client) to synchronize the audio and video frames. Katseff does not teach nor
17 disclose that audio and video frames are synchronized prior to receipt by the
18 workstation (client).

19 For these reasons, claim 1 is patentable over Katseff. Applicants
20 respectfully request that the §102 rejection of claim 1 be withdrawn.

21 **Dependent claim 9** is allowable by virtue of its dependency on base claim
22 1. For the reasons given above with respect to claim 1, the systems and methods
23 recited in claim 9 are neither disclosed nor taught by Katseff. Applicants
24 respectfully request that the §102 rejection of claim 9 be withdrawn.
25

1 **Claim 16** recites an apparatus for synchronizing asynchronous time-based
2 and motion data in a system in which the time-based data and the motion
3 data are transmitted by a server over a network to a client, the apparatus
4 comprising:

5 a data retriever for retrieving a time-based data stream and a motion
6 data stream at the server, each of the streams comprising frames of data;

7 a data stream synchronizer for buffering one of the time-based data
8 stream and the motion stream to produce two streams having synchronized
9 frames; and

10 a packetizer for packaging synchronized frames of motion data and
11 time-based data for use at the client for playback of synchronized motion
12 and time-based data to a user.

13 As discussed above, Katseff does not disclose accessing of separate audio
14 (time-based) and video (motion-based). Katseff shows a workstation (client) that
15 retrieves several frames of audio and video from a file server for storage in an
16 audio buffer and a video buffer. No synchronization is made as to the audio and
17 video frames. Katseff suggests that the workstation have a mechanism that
18 synchronizes the presentation of the various outputs (audio and video) (Katseff at
19 col. 8, lines 60-65 through col. 9, lines 1-5). Katseff does not disclose that audio
20 and video frames be synchronized prior to receipt at the workstation. Katseff
21 further describes that audio and video frames be buffered at the workstation and
22 that the workstation include a mechanism for synchronization of audio and video
23 frames for playback.

24 Claim 16 in part recites “a data stream synchronizer for buffering one of the
25 time-based data stream and the motion stream to produce two streams having

1 | synchronized frames.” Katseff does not show this aspect. As discussed, Katseff
2 | discloses buffering audio and video frames; however, Katseff does not disclose
3 | that the frames are synchronized with one another by buffering one of the time-
4 | based and motion stream. Further Katseff does not disclose that two streams
5 | having synchronized frames are produced from the buffering.

6 | Claim 16 in part recites “a packetizer for packaging synchronized frames of
7 | motion data and time-based data for use at the client for playback of synchronized
8 | motion and time-based data to a user.” Katseff does not show this aspect. As
9 | discussed above, Katseff does not disclose synchronized frames of motion and
10 | time-based data. Therefore, Katseff would have no need to package such
11 | “synchronize frames.”

12 | For these reasons, claim 16 is patentable over Katseff. Applicants
13 | respectfully request that the §102 rejection of claim 16 be withdrawn.

14 |
15 | **35 U.S.C. §103**

16 | **Claims 2, 4, 12, 14, and 18**

17 | Claims 2, 4, 12, 14, and 18 are rejected under 35 U.S.C. §103 as being
18 | unpatentable over Katseff in view of Shibata, Y., Media Synchronization Protocols
19 | for Packet Audio-Video Systems on Multimedia Information Networks (Shibata),
20 | IEEE, January 3-6, 1995. Applicant respectfully traverses the rejection.

21 | **Claims 2, 4, and 12** depend from claim 1 and hence incorporate the
22 | features of claim 1. As such claims 2, 4, and 12 require “...retrieving a time-based
23 | data stream and a motion data stream at the server, each stream comprising frames
24 | of data; variably buffering one of the time-based data stream and the motion
25 | stream to produce two streams having synchronized frames; and using the

1 synchronized frames at the client for playback of synchronized motion and time-
2 based data to a user.”

3 Katseff does not suggest nor teach retrieving both a time-based data stream
4 and motion data stream. Katseff shows retrieving single data streams such as a
5 JPEG data stream (Katseff col. 6, lines 60-65). Katseff does not suggest nor teach
6 synchronizing frames of the time-based data stream and the motion data stream to
7 produce two streams of synchronized frames, by buffering one of the data streams.
8 Katseff discloses buffering, however, the buffering of audio and video frames does
9 not produce synchronized frames (Katseff at col. 8, lines 60-65). Katseff relies on
10 a mechanism at the workstation to synchronize audio and video frames (Katseff at
11 col. 9, lines 1-5). The workstation (client) therefore never receives synchronized
12 frames for playback. The workstation is required to synchronized the frames with
13 a built-in synchronizing mechanism. Katseff does not suggest nor teach “using the
14 synchronized frames at the client for playback of synchronized motion and time-
15 based data to a user.”

16 Examiner points out that Shibata teaches a rate control message that is sent
17 to a server. The rate controller described on page 596 of Shibata does not suggest
18 that data streams be variably buffered. Shibata’s rate controller monitors a current
19 video frame rate with a set video frame rate value and adjusts the video frame rate
20 depending on the difference between the set video frame rate value and the current
21 video frame rate value. Further Shibata does not suggest that audio or time-based
22 rate values can be controlled. Shibata states that “since the audio segment rate is,
23 relatively, much smaller than that of the video, audio segments do not require rate
24 control ... [T]herefore, only the video frame rate is controlled. (Shibata at page
25 596).

1 Shibata provides no assistance in light of Katseff as to the recited
2 methodology of **claim 2**. Accordingly, a combination of Katseff and Shibata fails
3 to teach or suggest the claimed methods. Applicants respectfully request that the
4 §103 rejection of claims 2 be withdrawn.

5 **Claim 4** further adds “transferring only those data values for a frame that
6 have changed since a last frame was transmitted.” Frames are synchronized prior
7 to transferring of data values. In other words, a time-based frame is synchronized
8 with a motion frame; time based and motion based frames are sent with one
9 another. If no change occurs, the frames are not transmitted. Shibata discloses
10 displaying (receiving) video frames while silence (no audio) takes place. (Shibata
11 at page 597). Shibata describes that synchronization of audio and video takes
12 place at the display (client).

13 Shibata is cited for its teaching of a method whereby audio data is sent from
14 the video server to the client station only during a “talk spurt.” Shibata provides
15 no assistance in light of Katseff as to the recited methodology of claim 4. Both
16 Katseff and Shibata suggest and teach that audio and video synchronization takes
17 place at the client, teaching against synchronization of frames prior to receipt by
18 the client. Accordingly, a combination of Katseff and Shibata fails to teach or
19 suggest the claimed methods. Applicants respectfully request that the §103
20 rejections of claims 4 be withdrawn.

21 Shibata is cited for its teaching of a rate control message that is sent to a
22 server. Shibata provides no assistance in light of Katseff as to the recited
23 methodology of **claim 12**. Accordingly, a combination of Katseff and Shibata fails
24 to teach or suggest the claimed methods. Applicants respectfully request that the
25 §103 rejection of claim 12 be withdrawn.

1 **Claim 14** in part recites "...packaging synchronized frames of data where
2 each frame includes one or more channels of data in a system in which
3 synchronized frames are transmitted by a server over a network to a client, the
4 method comprising: storing a last data value for each channel in each frame
5 transmitted over the network; ...and packaging and transmitting over the network
6 only data for channels having changed data values.

7 Further claim 14 provides for storing a last data value and transmitting data
8 only when data values have changed. Examiner points out that "Shibata teaches a
9 method whereby a rate controller periodically monitors and stores in RAM a
10 current frame rate, a number computed by frames/second." Claim 14 is concerned
11 with a present (last) data value, storing the present (last) data value, and comparing
12 the stored present (last) data value to a subsequent data value. If there is a
13 difference in stored and subsequent data values, then the subsequent data value is
14 transmitted. As Examiner has pointed out, Shibata looks at a rate change, in
15 particular a video rate change. As discussed above, current video rate is compared
16 to a predetermined rate (that does not change), and current video rate is adjusted
17 according to the difference. The rate control described in Shibata does not suggest
18 that values can be compared, and that the value (stored present data value) for
19 which subsequent data values are compared against can change.

20 Therefore, Shibata provides no assistance in light of Katseff as to the
21 recited methodology of claim 14. Accordingly, a combination of Katseff and
22 Shibata fails to teach or suggest the claimed methods. Applicants respectfully
23 request that the §103 rejection of claims 14 be withdrawn.

24 **Claim 18** depends from claim 16 and hence incorporates the features of
25 claim 16. As such claim 18 requires "a data retriever for retrieving a time-based

1 data stream and a motion data stream at the server, each of the streams comprising
2 frames of data; a data stream synchronizer for buffering one of the time-based data
3 stream and the motion stream to produce two streams having synchronized frames;
4 and a packetizer for packaging synchronized frames of motion data and time-based
5 data for use at the client for playback of synchronized motion and time-based data
6 to a user.”

7 Katseff does not suggest nor teach retrieving both a time-based data stream
8 and motion stream. Katseff does not suggest nor teach synchronizing frames of
9 the time-based data stream and the motion stream to produce two streams of
10 synchronized frames, by buffering one of the data streams. Katseff discloses
11 buffering, however, the buffering of audio and video frames does not produce
12 synchronized frames (Katseff at col. 8, lines 60-65). Katseff relies on a
13 mechanism at the workstation to synchronize audio and video frames (Katseff at
14 col. 9, lines 1-5). Katseff is silent as to packaging synchronized audio and video
15 frames, in light of the fact that there are not synchronized frames to be packaged in
16 Katseff.

17 The Examiner presents the same arguments in rejecting claim 18, as those
18 presented in rejecting claim 14. Applicants assert the arguments in support of
19 claim 14. Further, the Examiner states that it would have been obvious to one of
20 ordinary skill in the art to modify Katseff to incorporate a storage device to hold
21 data values referring to Katseff.

22 Shibata provides no assistance in light of Katseff as to the recited
23 methodology of claim 18. Accordingly, a combination of Katseff and Shibata fails
24 to teach or suggest the claimed methods. Applicants respectfully request that the
25 §103 rejection of claim 18 be withdrawn.

1 **Claim 3**

2 Claim 3 is rejected under 35 U.S.C. §103 as being unpatentable over
3 Katseff as applied to claim 1, and in view of U.S. Patent No. 5,642,171 to
4 Baumgartner et al (Baumgartner).

5 **Claim 3** depends from claim 1 and hence incorporates the features of claim
6 1. As such claim 3 requires "...retrieving a time-based data stream and a motion
7 data stream at the server, each stream comprising frames of data; variably
8 buffering one of the time-based data stream and the motion stream to produce two
9 streams having synchronized frames; and using the synchronized frames at the
10 client for playback of synchronized motion and time-based data to a user."

11 Applicants present the arguments in support of claims 2, 4, 12, and 14 in
12 regards to Katseff.

13 Baumgartner is cited for its teaching of a method whereby a current video
14 frame number is subtracted from a current audio frame number. Baumgartner;
15 however, provides no assistance in light of Katseff as to the recited methodology
16 of claim 3. Accordingly, a combination of Katseff and Shibata fails to teach or
17 suggest the claimed methods. Applicants respectfully request that the §103
18 rejection of claim 3 be withdrawn.

19 **Claim 5 and 13**

20 Claims 5 and 13 are rejected under 35 U.S.C. §103 as being unpatentable
21 over Katseff as applied to claim 1.

22 **Claims 5 and 13** depend from claim 1 and hence incorporate the features of
23 claim 1. As such claims 5 and 13 require "...retrieving a time-based data stream
24 and a motion data stream at the server, each stream comprising frames of data;
25 variably buffering one of the time-based data stream and the motion stream to

1 produce two streams having synchronized frames; and using the synchronized
2 frames at the client for playback of synchronized motion and time-based data to a
3 user.”

4 Applicants present the arguments in support of claims 2, 4, 12, and 14 in
5 regards to Katseff.

6 Accordingly, Katseff fails to teach or suggest the claimed methods.
7 Applicants respectfully request that the §103 rejections of claims 5 and 13 be
8 withdrawn.

9 **Claims 6, 7, 10, 17, and 19**

10 Claims 6, 7, 10, 17, and 19 are rejected under 35 U.S.C. §103 as being
11 unpatentable over Katseff as applied to claims 1 and 16, and in further view of
12 U.S. Patent No. 9,950,202 to Durward et al (Durward).

13 **Claims 6, 7, and 10** depend from claim 1 and hence incorporate the
14 features of claim 1. As such claims 6, 7, and 10 require “...retrieving a time-based
15 data stream and a motion data stream at the server, each stream comprising frames
16 of data; variably buffering one of the time-based data stream and the motion
17 stream to produce two streams having synchronized frames; and using the
18 synchronized frames at the client for playback of synchronized motion and time-
19 based data to a user.”

20 Applicants present the arguments in support of claims 2, 4, 12, and 14 in
21 regards to Katseff.

22 Durward is cited for its teaching of a method whereby updated positional
23 data from a person’s head position sensor is mapped and used to determine the
24 position of a virtual being defined fro that user. Durward; however, provides no
25 assistance in light of Katseff as to the recited methodology of claims 6, 7 and 10.

1 Accordingly, a combination of Katseff and Shibata fails to teach or suggest the
2 claimed methods. Applicants respectfully request that the §103 rejection of claims
3 6, 7, and 10 be withdrawn.

4 **Claim 17** depends from claim 16 and hence incorporates the features of
5 claim 16. As such claim 17 requires “a data retriever for retrieving a time-based
6 data stream and a motion data stream at the server, each of the streams comprising
7 frames of data; a data stream synchronizer for buffering one of the time-based data
8 stream and the motion stream to produce two streams having synchronized frames;
9 and a packetizer for packaging synchronized frames of motion data and time-based
10 data for use at the client for playback of synchronized motion and time-based data
11 to a user.”

12 Applicants present the arguments in support of claim 18 in regards to
13 Katseff.

14 Durward is cited for its teaching of a method whereby updated positional
15 data from a person’s head position sensor is mapped and used to determine the
16 position of a virtual being defined fro that user. Durward; however, provides no
17 assistance in light of Katseff as to the recited methodology of claim 17.
18 Accordingly, a combination of Katseff and Shibata fails to teach or suggest the
19 claimed methods. Applicants respectfully request that the §103 rejection of claims
20 17 be withdrawn.

21 **Claim 19** recites in part “a method for playing back time-based and motion
22 based data that has been synchronized comprising: mapping the motion based data
23 to control the movement of virtual figure in a scene displayed at a client; and
24 playing back in a synchronization with movement of the virtual figure the time-
25 based data.”

1 As discussed, Katseff does not disclose nor teach that time-based and
2 motion based data streams be synchronized with one another prior to playback at a
3 client (workstation).

4 Durward is cited for its teaching of a method whereby updated positional
5 data from a person's head position sensor is mapped and used to determine the
6 position of a virtual being defined fro that user. Durward; however, provides no
7 assistance in light of Katseff as to the recited methodology of claim 19.
8 Accordingly, a combination of Katseff and Durward fails to teach or suggest the
9 claimed methods. Applicants respectfully request that the §103 rejection of claims
10 19 be withdrawn.

11 **Claims 8, 11**

12 Claims 8, 11 are rejected under 35 U.S.C. §103 as being unpatentable over
13 Katseff as applied to claim 1, and in further view of U.S. Patent No. 5,812,791 to
14 Wasserman et al (Wasserman).

15 **Claims 8 and 11** depend from claim 1 and hence incorporate the features of
16 claim 1. As such claims 8 and 11 require "...retrieving a time-based data stream
17 and a motion data stream at the server, each stream comprising frames of data;
18 variably buffering one of the time-based data stream and the motion stream to
19 produce two streams having synchronized frames; and using the synchronized
20 frames at the client for playback of synchronized motion and time-based data to a
21 user."

22 Applicants present the arguments in support of claims 2, 4, 12, and 14 in
23 regards to Katseff.

24 Wasserman is cited for its teaching of a method whereby images are
25 decompressed for the use of textures, or backgrounds with overlays of moving

1 video on the still images. Wasserman describes a time stamp which is different
2 than a descriptor packet. The time stamp in Wasserman allows video to be
3 displayed at determined 0.7 intervals. The descriptor packet of the subject
4 application provides information that is provided along with the data frames that
5 describe content. The content in the descriptor packet does not change, unlike the
6 video presentation in Wasserman that is expected to continually change.

7 Wasserman provides no assistance in light of Katseff as to the recited
8 methodology of claims 8 and 11. Accordingly, a combination of Katseff and
9 Wasserman fails to teach or suggest the claimed methods. Applicants respectfully
10 request that the §103 rejection of claims 8 and 11 be withdrawn.

11 **Claim 15**

12 Claim 15 is rejected under 35 U.S.C. §103 as being unpatentable over
13 Katseff and Shibata as applied to claim 14, and in further view of Wasserman.

14 **Claim 15** depends from claim 14 and hence incorporates the features of
15 claim 14. As such claim 15 requires “packaging synchronized frames of data
16 where each frame includes one or more channels of data in a system in which
17 synchronized frames are transmitted by a server over a network to a client, the
18 method comprising: storing a last data value for each channel in each frame
19 transmitted over the network; ...and packaging and transmitting over the network
20 only data for channels having changed data values.”

21 Applicants present the arguments made in support of claim 14 in regards to
22 Katseff.

23 Wasserman provides no assistance in light of Katseff and Shibata as to the
24 recited methodology of claim 15. Accordingly, a combination of Katseff, Shibata,
25

1 and Wasserman fails to teach or suggest the claimed methods. Applicants
2 respectfully request that the §103 rejection of claims 15 be withdrawn.

3 **Claim 20**

4 Claim 20 is rejected under 35 U.S.C. §103 as being unpatentable over
5 Katseff and Durward as applied to claims 10 and 17 above, and in further view of
6 Baumgartner. Examiner points out that claim 20 incorporates substantially similar
7 subject matter as claimed in claims 1, 10, 16, and 17. Claim 20 is rejected by the
8 same arguments presented in rejecting claims 1, 10, 16, and 17.

9 Applicants reassert the arguments presented in support of claims 1, 10, 16,
10 and 17 in traversing Examiner's rejection of claim 20. Applicants respectfully
11 request that the §103 rejection of claims 20 be withdrawn.
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1 **CONCLUSION**


2 All pending claims 1-20 are in condition for allowance. Applicant
3 respectfully requests reconsideration and prompt issuance of the subject
4 application. If any issues remain that prevent issuance of this application, the
5 Examiner is urged to contact the undersigned attorney before issuing a subsequent
6 Action.

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10 **REMARKS**

11 Claims 1-20 remain in the application. Applicants respectfully request
12 consideration of these claims and issuance of the subject application.

13
14 Respectfully Submitted,

15
16 Dated: Nov. 27, 2002

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1 **MARKED UP VERSION OF PENDING CLAIMS UNDER 37 C.F.R. §**

2 **1.121(C)(1)(ii):**

3 Amend claims 1, 3, and 20 as follows and in accordance with 37 C.F.R. §
4 1.121(c)(1)(ii), by which the Applicant submits the following marked up version
5 only for claims being changed by the current amendment, wherein the markings
6 are shown by brackets (for deleted matter) and/or underlining (for added matter):

7
8 1. (Once Amended) A method of synchronizing asynchronous time-
9 based and motion data in a system in which the time-based data and the motion
10 data are transmitted by a server over a network to a client, the method comprising:

11 retrieving a time-based data stream and a motion data stream at the server,
12 each stream comprising frames of data;

13 variably buffering one of the time-based data stream and the motion data
14 stream to produce two streams having synchronized frames; and

15 using the synchronized frames at the client for playback of synchronized
16 motion and time-based data to a user.

17
18 3. (Once Amended) The method of claim 1 further including
19 calculating a difference between delays for the motion data stream and the time-
20 based data stream through the server to determine an amount of variable buffering
21 for a faster of the two streams.

22
23 20. (Once Amended) A method of synchronizing asynchronous motion
24 and audio data in a system in which the motion and the audio data are transmitted
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1 by a server computer to one or more clients, the clients providing a real time output
2 of synchronized motion and audio data, the method comprising:

3 retrieving an audio stream including voice data and a motion data stream
4 including one or more motion data channels at the server, each stream[s] including
5 frames of data;

6 calculating a delay through the server for a frame of data on each of the
7 streams;

8 calculating a difference between the delay for the audio stream and the
9 motion data stream to determine which of the two streams is faster;

10 variably buffering a faster of the streams to synchronize the audio stream
11 and the motion data stream resulting in two output streams having synchronized
12 data frames;

13 packaging the synchronized data frames;

14 multicasting the synchronized data frames to one or more clients over a
15 network;

16 at each client computer, using the synchronized data frames for
17 synchronous playback of the audio and motion data for display to a user.